heat flow calibration comprising running a heat flow scan prior to placing the sample pan and the reference on the surface of the electrically insulating substrate.

12. The method of claim **10**, further comprising calculating a sample base excitation current and a reference base excitation current.

13. The method of claim **12** further comprising determining the excitation currents which will provide constant calorimetric sensitivity by running a scan of a sapphire reference over the temperature range of interest using the sample base excitation current and the reference base excitation current.

14. The method of claim **13**, comprising computing the heat flow to the sapphire sample as a function of sample temperature using the known heat capacity of sapphire.

15. The method of claim **14**, comprising calculating the quotient of the sample output voltage to the computed heat flow to the sapphire sample.

16. The method of claim **15**, comprising obtaining the excitation currents required for constant calorimetric sensitivity by dividing the quotient of the sample output voltage to the computed heat flow to the sapphire sample by the desired calorimetric sensitivity.

17. A differential scanning calorimeter comprising:

(a) an electrically insulating ceramic substrate having a top surface and a bottom surface;

(b) a sample thin-film resistance temperature detector sensor deposited on the bottom surface of the electrically insulating ceramic substrate;

(c) a reference thin-film resistance temperature detector sensor deposited on the bottom surface of the electrically insulating ceramic substrate;

(d) a protective layer of dielectric covering the sample thin-film resistance temperature detector sensor and a protective layer of dielectric covering the reference thin-film resistance temperature detector sensor;

(e) a sample in a sample pan placed on the top surface of the ceramic substrate opposite to the sample thin-film resistance temperature detector sensor, and a reference pan placed on the top surface of the ceramic substrate opposite to the reference thin-film resistance temperature detector sensor;

(f) means for applying a sample sensing current to the sample thin-film resistance temperature detector and means for applying a reference sensing current to the reference thin film temperature detector;

(g) means for measuring a sample output voltage across the sample thin-film resistance temperature detector sensor and means for measuring a reference output voltage across the reference thin-film resistance temperature detector sensor; and

(h) means for calculating the temperature of the sample pan from the sample output voltage, and means for calculating the temperature of the reference pan from the reference output voltage;

(i) means for determining and amplifying the difference between the temperature of the sample pan and the temperature of the reference pan; and

(j) means for calculating the differential heat flow to the sample from the amplified difference between the temperature of the sample pan and the temperature of the reference pan,

wherein the amplitudes of the sample sensing current and the reference sensing current are determined and modified so as to obtain amplitudes for said sensing currents so as to provide constant calorimetric sensitivity for the calorimeter over a desired temperature range.

18. The differential scanning calorimeter of claim **17**, wherein the ceramic substrate has a high thermal diffusivity such that the differential scanning calorimeter has a relatively rapid dynamic response.

19. The differential scanning calorimeter of claim **17**, wherein the ceramic substrate has a low thermal diffusivity such that the differential scanning calorimeter has a relatively greater calorimetric sensitivity.

20. The differential scanning calorimeter of claim **17**, wherein the sample and reference thin film temperature resistance detectors are deposited on the ceramic substrate in a serpentine pattern.

21. The differential scanning calorimeter of claim **17**, wherein the ceramic substrate comprises a base portion, a sample lug portion and a reference lug portion, and wherein the sample lug and the reference lug are symmetrically and planarly disposed on either side of the base.

22. The differential scanning calorimeter of claim **17**, wherein the ceramic substrate is selected from alumina, aluminum nitride, beryllia and zirconia.

23. A sensing system for a differential scanning calorimeter comprising:

(a) a metallic disk;

(b) a sample thin-film resistance temperature detector sensor mounted in a sample region of the metallic disk;

(c) a reference thin-film resistance temperature detector sensor mounted in a reference region of the metallic disk;

(d) sample current means for producing a sample sensing current for the sample sensor and reference current means for producing a sensing current for the reference sensor, said sample current means producing a sample output voltage and said reference current means producing a reference output voltage;

(e) a sample temperature amplifier amplifying the sample output voltage and a reference temperature amplifier amplifying the reference output voltage;

(f) a sample temperature calculation function calculating a temperature for the sample region:

(g) a reference temperature calculation function calculating a temperature for the reference region;

(h) means for determining the amplitude of the sample sensing current and the amplitude of the reference sensing current and for modifying the determined amplitudes of said sensing currents so as to obtain amplitudes for said sensing currents such that the calorimeter provides constant calorimetric sensitivity over a desired temperature range;

(i) means for determining and amplifying the difference between the temperature of the sample region and the temperature of the reference region; and

(j) means for calculating the amplitude of the differential heat flow to the sample with respect to the reference from the amplified difference between the temperature of the sample region and the temperature of the reference region.

24. The sensing system of claim **23**, wherein the temperature of the sample region and the temperature of the reference region are determined using the modified Callender-VanDusen equation.

25. The sensing system of claim **23**, further comprising a sample pan placed on the side of the metallic disk opposite to the side on which the sample resistance temperature